The need for narrative in clinical education

Abstract

This article aims to discuss the need for clinical education to embrace the use of narrative. It discusses the split – most evident in Anglophone countries – between the arts and the sciences, before discussing what can and cannot be known from the scientific method, and what can and cannot be known from narrative approaches. It concludes that narrative is the natural way to teach and learn and has the advantage that it can explore hypothetical situations in safety as well as both to learn and to convey values and attitudes while the hypothetico-deductive method can say what does happen but can shed no light on what should happen.

Introduction

Eva (2014) reminds us how Lasagna's (1964) revision of the Hippocratic Oath tells us that 'there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug.' (Lasagna, 1964: p11) In the course of this article, we consider how science and the arts were once wedded, before splitting in a manner which, most evidently in Anglophone countries, rendered them almost as strangers to each other. We move on to discuss in detail the need for narrative in clinical education and how this can be beneficial to teachers, learners, and patients and their relatives by permitting an exploration of 'emplotment' and hence hypothetical situations with full cognisance of all the actors and the impact of the scenario upon each and this in all its diverse manifestations.

Science and the arts

For a Renaissance scientist, there could never be any question of a division between the arts and the emergent sciences. Whether da Vinci, Harvey, Paracelsus or any of their contemporaries, the simple need to communicate their findings not only to their peers but more especially to their

patrons meant that they had not only to be scientific in the sense of their explorations but also artists both in the sense of the graphic depiction of their work and in the verbal descriptions. An outstanding example of such versatility is Girolamo Cardano, physician by trade, but who produced in the course of the 16th century highly influential texts on 'medicine, astrology, natural philosophy, mathematics, and morals … [and on] devices for raising sunken ships and stopping chimneys from smoking' (Grafton, 2002: pxii) and whose *Book of my Life* (Cardano, 2002) gives an insight into how minds such as his worked.

It is in some senses ironical that the scientific descendants of these Renaissance minds might well find them somewhat unnecessarily verbose, elaborate and even obscure. The Renaissance man, and to a large extent woman, lived the ideal of the generalist who could reliably move in and out of diverse circles and engage in meaningful discussion across the full range of human experience and contemporary knowledge.

Even as late as the Long Eighteenth Century could we find such eminent figures as Dr Samuel Johnson – a doctor of letters and not medicine as physicians had not yet gained a pre-eminence over the title (Hamilton, 1981; Strathern, 2005) – whose 1773 edition of his dictionary (first published in 1755) had an entry for the word *science* which he pointed out was derived from the Latin word *scientia* meaning knowledge (Johnson, 1773/1828). He then lists the meanings of the word *science* in his times as follows (Lyons, 2001).

1. Knowledge
2. Certainty grounded on demonstration
3. Art attained by precepts, built on principles.
4. Any art or species of knowledge

5. One of the seven liberal arts, grammar, rhetorick, logick, arithmetick, musick, geometry, astronomy

These liberal arts were close to the Medieval *Trivium* and *Quadrivium* which every aspiring Medieval physician who attended university [although most did not] would have studied prior to undertaking his [and almost never *her*] medical studies in a higher faculty. That the medical student would be Master of *Arts* prior to studying medicine was no coincidence as the Trivium and Quadrivium were deemed essential for the proper understanding of any learning in a higher faculty, whether this be Medicine, Law or Theology. The Arts were the gateway to further study and only by demonstrating a basis in them could be aspiring university-trained physician proceed further (Matheson, 1999).

It is notable that Dr Johnson includes both what we would now recognise as science and the liberal arts under the same heading. The split came much later with the term *scientists* coined in 1834 in contrast to *artists* as students of the material world (Whewell, 1834) and by 1977, the fourth edition of the Penguin Dictionary of Science has only physics, biophysics, astronomy, chemistry, biochemistry, molecular biology, and mathematics and computing listed under *science*.

The split was underlined quite dramatically in the first examinations for the Indian Civil Service (ICS) in 1858 whose Part One examined the 'subjects of a general education' (Compton, 1968: p267), but sought quite openly to recruit 'top Oxford or Cambridge honours graduates' (p267), and hence focussed on Latin and Greek as taught in those universities. The result, unsurprisingly, was the domination of Oxbridge graduates among those who passed and the nearly total exclusion of graduates from Scotland's five universities for whom the split between the arts and the sciences only came much later and whose knowledge of Latin and Greek was

more functional than the models of parsing beloved in the two [out of then four] English universities (Bell and Grant, 1977).

Despite this, as Midgeley (2009) reminds us, ‘

> Blake and Coleridge could discuss scientific problems with Faraday and Davy, … Darwin could write about Kant very sensibly … [and] TH Huxley wrote a book on Hume (Midgely, 2009: p27).

Nonetheless, the stance taken by the ICS showed that the trend was moving away from the polymath.

While Scotland continued its love of generalism, with school pupils intending for university being prepared across a range of both science and arts subjects, in England [and hence in the British Empire at large] early specialisation became the norm and eventually children as young as 14 were able to effectively drop virtually all sciences [or virtually all arts] and to funnel their studies until, without having yet left school, they were left with three, or exceptionally four, subjects which would only very rarely cross the arts/science divide.

The situation in England was made worse by a rapid growth in anti-intellectualism, as demonstrated in Hughes [1877] *Tom Brown’s Schooldays* where the eponymous Tom states that

> I want to be A1 at cricket and football, and all the other games, and to make my hands keep my head against any fellow, lout or gentleman … I want to carry away just as much Latin and Greek as will take me through Oxford respectably (Hughes, 1857/1963: p282).

As science moved from being a pursuit primarily of gentlemen of leisure [as were Lord Cavendish and the Honourable Robert Boyle, to name but two] and technology and engineering

developed and became a major driving force for the British Empire, an ethic developed and thrived that opposed to anything that resembled physical labour (Gikandi, 1996). Latin and Greek were effectively useless in themselves and hence respectable for this very reason, while engineering and science had use but demanded, or at least implied, physical labour, however refined, and were thus to be disparaged as worthy only of the lower orders. Science and engineering were directly related to jobs; Latin and Greek were not. To make matters worse, science and engineering resembled jobs that one might prepare for by means of an apprenticeship and, in reality, were [and remain] subjects favoured at university by students from working class backgrounds. Even the massive growth of engineering in the UK during and after the Industrial Revolution could do nothing to change the *Weltanschauung* of the ruling classes. Even the accomplishments of engineers as great as Brunel were powerless in the face of this thinly veiled class discrimination.

Thus, we never see in UK history any phenomenon comparable to the prestigious *Grandes Ecoles* such as Napoleon established in France to train in the first instance civil engineers [as in case of the *Ecole des Ponts et Chaussées*].

The Second World War, otherwise a uniting force across many domains of UK society, exacerbated the division between the arts and the sciences with a shroud of mystery, necessary no doubt for the war effort, surrounding the 'boffins' and 'backroom boys' [i.e. scientists and engineers] upon whom the nation's hopes were pinned but who were depicted as not only inevitably male and balding but also as totally incomprehensible to the general public, a situation aided by some of the less accessible public information films which assumed a level of nutritional knowledge well beyond that of even a well-educated public. It was thus in parody of the incomprehensible scientist that 'Professor' Stanley Unwin, a comedian in variety theatre and

radio [and later television], found fame and fortune by literally talking incomprehensible gibberish. For example:

> *Now, like all real life experience stories, this also begins once a polly tito, and Happiness Stan, whose life evolved the ephemeral colour dreamy most, and his deep joy in this being the multicolour of the moon. Oh yes. His home a victoriana charibold, the four-wheel folloped ft-ft-ft out the back. Now, as eve on his deep approach, his eye on the moon. Alltime sometime deept joy of a full moon scintyladen dangly in the heavenly bode. But now only half! So, gathering all behind him the hintermost, he ploddy-ploddy forward into the deep complicadent fundermold of the forry to sort this one out.* [1].

Against this backdrop CP Snow delivered his 1959 Rede Lecture on the two cultures which are the arts and the sciences.

The two cultures

Snow pointed out that the sciences and the humanities come from different cultures and even reflected differing social classes with the greatest scientists often being of working class origin; and particularly so for those working in the applied sciences such as engineering (Snow, 1959). What he voiced was the reality in UK society and 'a special instance of the lack of scientific literacy in society' as a whole (Grayling, 2009: p27).

Snow's lecture drew attention to these two cultures, and it was really for those trained in the humanities to take the sciences more seriously. He argued that, for example, the Second Law

[1] Available at: http://en.wikiquote.org/wiki/Stanley_Unwin_(comedian)#Quotes_about_Stanley_Unwin

of Thermodynamics should be a cultural icon along with the works of Shakespeare (Midgely, 2009) in response to which Flanders and Swann rose to the challenge and, in *First and Second Law*, did a song[2] celebrating the Second Law in a manner which was both entertaining and scientifically accurate.

> *Heat is work and work's a curse*
> *And all the heat in the Universe*
> *Is gonna cooool down 'cos it can't increase*
> *Then there'll be no more work and there'll be perfect peace*
> *Really?*
> *Yeah – that's entropy, man!*

At the time of Two Cultures lecture, school selection according to some measure of ability at age 11 via the 11+ Examination [12 in Scotland via the Qualifier] was almost universal across the United Kingdom and, at least as far as those destined to be the rulers of the future, the pinnacle of achievement was to graduate in the Classics from Oxford or Cambridge as it was from this group that much of government and especially the higher echelons of the Civil Service were drawn (Bell and Grant, 1977).

The same two cultures argument as employed by Snow can be applied to the cultures in and around clinical education where there is, for example, an uncomfortable juxtaposition of the scientific, where the patient and his/her condition are 'objectified' and one might even say dehumanised – though this may be the only way not to be paralysed by empathy with a sufferer's pain – and the narrative, where the patient and their condition are a story, replete with characters, drama, suspense and some sort of hoped for – or feared – and then actual, dénouement. In the

[2] Available in its entirety from http://www.iankitching.me.uk/humour/hippo/entropy.html

narrative, it is feelings and perceptions that come to the fore. The patient and their condition are central, but they are there as actors within the drama, subjective and potentially irrational but key to the proceedings.

The problem is one of how to introduce such narrative into medicine and a possible door is through increasing the understanding of the role that the arts in general and literature in particular can play in increasing the clinician's understanding of what the patient is really going through and hence why they make the decisions that they do.

Evans (2003) argues that incorporation of literature into clinical education supports four 'goods':

1. An education (as opposed to training)
2. Ethics and communication skills
3. The development of personal values
4. A sense of wonder at embodied human nature

Unfortunately, Evans fails to make the case that the humanities are essential for any of these activities. There seems to be the recognition that it is in some way good for a clinician to know something of the humanities, but it is not clear what this should be.

Part of the problem surrounds the idea of truth as embodied in the arts and in the sciences. Both cultures aim to understand the 'truth' but do so by different means. The question is whether these two approaches can be resolved.

The scientific approach

The basis of the scientific method is ‘objectivity’ which is often defined as things being true independently of the observer. However, a moment's reflection shows that this cannot be the case. If no human has ever observed something, then no human can know about it. The statement should read ‘independent of the choice of observer’, in itself a rather tall order and more of an ideal than an everyday reality.

Coupled with objectivity, there is empiricism. The empirical approach grounds all knowledge in sensory experiences (Hume, 1777/1977). The problem which philosophers have wrestled with through the ages is to discern the basis upon which this might be justified. Descartes, in his *Mediations* (Descartes, 1637/2007), put the sceptic’s case that senses could not be relied on due to two problems. The first was the problem of illusions and the second is how to distinguish dream from reality.

The justification for this grounding is ultimately pragmatic. The argument runs that if an animal's senses gave unreliable evidence about the real world, such as interpreting the presence of a lion as a rather unusual daffodil, then that animal would be, in Darwin's terms, less ‘fit’. In fact, people generally have such confidence in their senses that scientists usually publish without checking that others see the same image down the microscope.

The issue with illusions is interesting. Illusions are detected on the basis of triangulation, when two different lines of evidence give rise to two different conclusions. Again, we tend to know when our senses are most and when least reliable. One often quoted example is the issue of colour constancy which breaks down under extreme conditions of lighting or which falter under the weaknesses of human colour perception – an example of which pertains to one of the present writers who long possessed what he thought was a black coat, only for it to be revealed as being

very dark blue when compared to a garment which was indeed black. An example of the breakdown of colour constancy occurs when red surface is illuminated by red light and so will appear white [or grey if the frequencies do not quite match]. Colour appearances are at their most reliable when viewed with sunlight at mid-day with a clear sky, conditions that most closely resemble the conditions under which our vision evolved, and very much unreliable when seen under the limited frequencies available with fluorescent tube lights. As Hume (1777/1977) himself pointed out, sensory data must, on occasion, be interpreted rationally.

This idea leads to the notion of an 'objectivity' defined as when the same opinion is offered, independent of the choice of observer. This works well [though not infallibly so] when it comes to primary sense data but could, in principle, be applied to any question.

Opinions on the colour of a flower will usually be accepted as objective, but not on such issues as who should be the next prime minister. Clearly, the opinion on the latter would be highly dependent upon the choice of the 'observer' and we can predict which opinions are those that can be considered 'objective' and which are not. Thus, the term is usually reserved to primary sense data and the hallmark of such is that the system has no memory although this is not quite true, as one can have 'after-images' but they are transient and fade. However, to return to the visual system, the perception of the colour red is not affected by what colours have been previously seen, even though vision itself is entirely subjective and potentially individual to the viewer. By contrast, one's opinion of a politician can be permanently affected by preceding events such as the Iraq war or Brexit.

The hypothetico-deductive model and the sciences

The scientific method is often equated to the hypothetico-deductive process. This process is a key component of science, but it is just a component. The triumph of the hypothetico-deductive method

is that it solves the logical basis of universal statements and of induction. The issue has always been as to how one can take the step from ‘all the swans that I have seen are white’ to the universal statement ‘all swans are white’. The straight answer is that one cannot (unless whiteness is part of the definition itself of a swan). The hypothetico-deductive method makes the observations that one can never prove a universal statement and never disprove a singular statement (Popper, 1959). No matter how many white swans one has seen, this does not prove that all swans are white. Conversely, one cannot prove that a black swan does not exist simply on the basis that you have not seen one as you cannot prove that you have inspected all swans. The scientific method works by postulating what may not occur and these are termed scientific laws. One then tries to disprove this by looking for forbidden events. The dichotomy in science is not true/false but consistent/false. Scientific laws are not in themselves provable, but they are consistent and open to being falsified.

However, these laws, such as the Law of Conservation of Energy, do not explain what is actually occurring. Rather, they predict what will be observed, given appropriate conditions.

Good science is based on determining mechanism. Mechanism can never be directly proved and is only inferred or ‘constructed’ on the basis of the following reasoning. What one observes is events and if one wishes to prove that events A and B are linked then one needs to demonstrate four things:

1. If A then B.
2. If not B, then not A
3. Cause A to happen and B happens
4. Prevent B happening and A does not happen.

These principles surface in many guises and under different names within sciences such as Koch's postulates in microbiology.

The limitations of the scientific method

The four steps that are required to demonstrate causality put severe constraints on the sort of events that can be investigated. In particular, they must be frequent, reversible or at least reproducible. The scientific method cannot be applied to rare and irreversible events which are just the conditions that apply to many of the most interesting events which involve humans such as 9/11 or World War II.

Humans clearly have memory and ethics alone make it unacceptable to even consider re-creating the same conditions to see if the same events recur – even if the formidable practical problems could be overcome. Thus, there is a need for a different approach for this type of problem.

Narrative and the humanities

People have been telling stories since the dawn of time and it is one of the major ways by which we learn. Great literature has two key features: plot and characterisation (Booker, 2004). The first feature of a good story is 'emplotment' whereby a string of events are connected (Ricoeur, 1981). Heidegger postulated that narratives serve a 'presencing' function (Heidegger, 1971: p44) whereby events past or future, real or imaginary are 'presenced'. It is easy to see how mirror neurones (Iacoboni and Dapretto, 2006) could be hypothesized to be a neural substrate for such a process.

Emplotment can be equated to mechanisms and so represent the potential for deep learning. Schank argues that knowledge consists of stories and what we recall are plots (Schank, 1990) though a good storyteller reinvents the details to make the story 'come alive' or presenced'. These stories come from five sources:

1. Official
2. Invented (adapted)
3. First-hand (experiential)

4. Second-hand
5. Culturally common

These stories result in the formation of what Schank calls ‘scripts’; i.e. a set of expectations of what will happen in well-defined situations, and the aim of storytelling is to change other people's behaviour. In addition to script formation, the other key issue is indexing to allow recall of appropriate stories at the appropriate time. Indexing is done on the basis of facts or features in the story.

In his view, intelligence then is the number and complexity of these scripts and of the indexing. This makes the hallmarks of intelligence to be observation and association and leads to the question of what are the features that lead to association.

Narratives are how we learn and communicate. We live in social groups and it is a great advantage if an individual can understand what another is thinking. The mere concept that another individual has a mind as well as ourselves is called ‘Theory of mind’ (de Waal, 2006) and it is postulated, and the evidence is being gathered, that this works by imagining how we would feel if we were in somebody else's shoes. This leads to the other hallmark of great literature – good characterisation, which allows the reader to feel as the character feels, think as they think and even act – in their mind – as they act. This is why literature and poetry are sometimes described as moral activities (Eagleton, 2007).

It should be noted what narrative cannot do. While it can be used to speculate, it cannot prove mechanisms. Attempts to use narrative or discourse in this way has (a) formed the basis of the post-modernist approach, (b) has been highly influential and (c) is mostly of extremely poor quality (Gross and Levitt, 1998; Sokal and Bricmont, 1998) and is not a suitable alternative to the hypothetico-deductive method in situations where the latter can be applied, given that learning can

have two distinct meanings. One is acquiring information from a teacher and narrative is good for 'passing it on'. However, it does need to be distinguished from the other which is discovering and from situations when a scientist discovers information from the real world. Here, narrative fails (Sokal and Bricmont, 1998).

Narrative medicine

Within medicine, there is increasing recognition of the importance of the narrative approach (Charon, 2006). In the 20th century, the scientific approach resulted in doctors treating patients increasingly like experimental subjects, culminating in the Tuskegee Syphilis Study Scandal, whereby 600 syphilis sufferers were denied treatment to see the natural history of the disease (this study also had distinct racial overtones as all the subjects were of African-American descent) (Heller, 1972). Such objectification, under the name of science, by concentrating on the frequent and the reproducible, ignores the unique and the personal.

In contrast, narrative medicine gives insight into how individual patients make sense of their life and that by listening to them that one conveys respect and that, in itself, can carry therapeutic benefit.

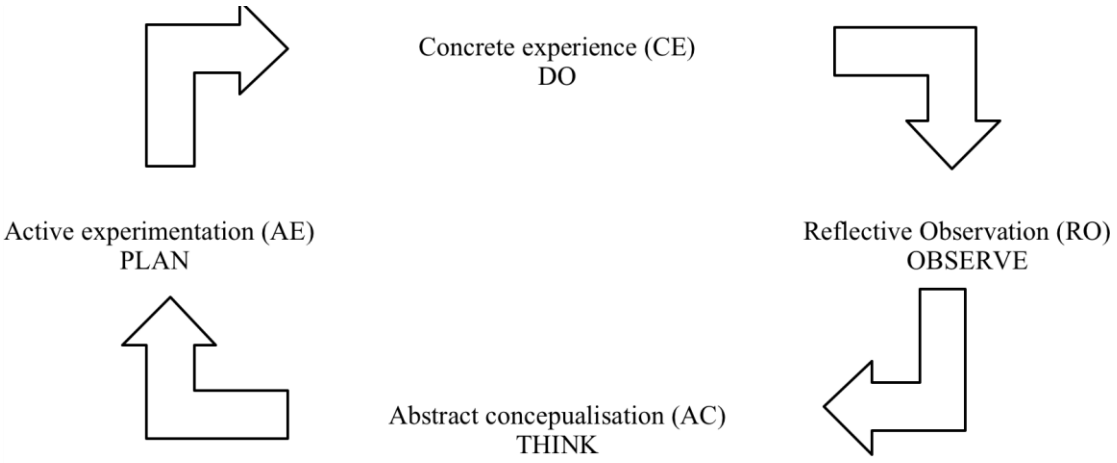
This approach requires 'close reading' and this is a skill that requires development as well as the ability to listen. It also requires personal insight on the part of the clinician and an awareness not only of how s/he thinks but also of how patients may perceive them and their profession (Groopman, 2007).

The second issue is that the sciences can shed light on what does happen but not on what should happen [to equate these two is termed 'the naturalistic fallacy]. Accordingly, one would expect a narrative approach to be particularly valuable as it can engage with *ought* as well as *does*

and all the while distinguish between the two (Jones, 1999). This exploration of hypotheticals and alternatives is what leads to the notion that good literature and poetry can be defined as being moral (Eagleton, 2007) meaning that it can affect behaviour. Miller puts it more strongly 'Without story telling there is no theory of ethics. Narrative examples, stories ... are indispensable to thinking about ethics' (Miller, 1987: p3). Narratives also show how far people will go in search of truth or results. They add the human aspect to human endeavour and maintain the human aspect in human suffering.

Narrative and education

A popular paradigm for learning is experiential learning theory (ELT) as proposed by Kolb (A Kolb and Kolb, 2005) along with the learning style inventory (DA Kolb, 1976) and the umpteen variations on this theme. Kolb's theory proposes that learning is a four-stage process that occurs in sequence of concrete experience (CE), reflective observation (RO), abstract conceptualisation (AC) and active experimentation (AE).



Concrete experience	Where the learner is actively experiencing an activity (e.g. a laboratory session or a field class)
Reflectiver observation	Where the learner is consciously reflecting back on that experience
Abstract conceptualisation	Where the learner is being presented with/or trying to conceptualise a theory or model of what is (to be) observed
Active experimentation	Where the learner is trying to plan how to test a model or theory or plan for a forthcoming session

Figure 1: The Kolb Learning Cycle

These stages are highly reminiscent of the hypothetico-deductive model of the scientific process of experiment, observation, hypothesis and prediction with a one-to-one mapping between the two models. This suggests that Kolb fell for a variant of the psychological fallacy that how we should think is how we do think! A systematic review of learning styles was highly critical of the whole field and in particular labelled the idea of the learning cycle as 'may be seriously flawed' (Coffield *et al.*, 2004: p14). Even more suspect are attempts to map stages of the cycle to parts of the brain (Zull, 2002).

By contrast, Klein, in his research on how people make decisions (naturalistic decision making), found stories to be the best way to access this information and that stories were the medium by which experience was shared in the workplace (Klein, 1998). Work by Pennington and

Hastie showed that jurors made sense of legal evidence by assembling it into stories so as to generate understanding and to facilitate recall. They also showed that the first story that the jurors constructed carried the greatest influence (Pennington and Hastie, 1993). Their findings are intuitively plausible. It is well known that we are all instinctively distrustful of a story that changes. It leads to the conclusion, in teaching, that getting the story right first time is of particular importance and this places a particular demand on the teacher that they have the necessary subject knowledge.

Conclusion

The hypothetico-deductive method has proved supremely triumphal for the acquisition of knowledge and the Kolb learning cycle is one example of the attempt to import the same method into education. However, this method was only fully understood until the 20th Century and is certainly not the natural method by which humans have acquired higher knowledge. Although we all start to acquire knowledge by interaction with the world – a process called play – this is a time-consuming method and, as soon as we can begin to use language, play is largely supplanted by the narrative approach, even when that leads to play!

The narrative is the natural way to teach and learn. It has the further advantage in that the narrative can explore hypothetical situations in safety and is a particularly useful way both to learn and to convey values and attitudes over ethical issues. The hypothetico-deductive method can say what does happen but can shed no light on what should happen.

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